THE MINERAL INDUSTRIES OF

AFGHANISTAN AND PAKISTAN

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AFGHANISTAN

The landlocked Islamic State of Afghanistan is an extremely poor country with rugged terrain and a seasonally harsh climate. It encompasses approximately 652,000 square kilometers (km^2). For almost 25 years, the country endured extreme political upheaval, civil strife, and outright war. Most of the major administrative, agricultural, communication, education, government, heavy- and small-scale industries, social services, and transportation systems were seriously damaged or utterly destroyed. An estimated 4 million to 5 million of the 26 million population was displaced within and outside the country. Additionally, natural catastrophes, such as drought and earthquakes, afflicted the country in the past few years (Afghanistan Online, undated, a§,[1] b§).

The country, however, had economic potential owing to natural resources that range from exotic minerals, such as lapis lazuli and other fine gems for which Afghanistan has been an important source for many centuries, to more standard ore deposits, such as copper, gold, and iron ore (Shroder, 1983; Geotimes, 2002). Precious and semiprecious stone deposits are numerous. Some of the main gemstones that were produced were aquamarine, emerald, kunzite, lapis lazuli, ruby, and tourmaline, most of which were exported to Pakistan (Prost, 2001§). Additional mineral resources include barite, coal, chromite, lead, salt, sulfur, talc, and zinc, as well as natural gas and petroleum. Some of these resources were mined in the past, and others were not. The country has limited resources under production and generally lacks the infrastructure to use them. Although a small copper deposit is located at Ainak, which is an isolated area in Logar Province and had a capacity of 5,000 metric tons per year of ore, it has been closed since the ousting of the Taliban (the fundamentalist Islamic militia that took over the Government of Afghanistan in 1995-96 and set up a Muslim Government which enforced a strict Muslim code of behavior until late 2001-early 2002). Cement produced from indigenous sources also was provided to local markets in minor quantities. The main fossil fuel resources in Afghanistan were coal, natural gas, and petroleum. Adequate investments to bring mines or pipelines into acceptable production have not been made for many years (Herold, 2003§).

The economy was essentially agricultural, which included subsistence farming and livestock raising. Afghanistan's gross domestic product (GDP) was estimated to be $7.0 billion with per capita income of about $300. The bulk of national production consisted of agricultural and forestry products (53%), light industry (28%), trade (8%), construction (6%), and others (5%) (Asian Development Bank, 2002§).

Afghanistan's economy, however, had additional potential because of its strategic geographic position as a transit route for Central Asian hydrocarbons to the Arabian Sea. The feasibility of using the country as a transit route was demonstrated in the late 1990s when Unocal Corp. of the United States led the multinational Central Asia Gas Pipeline Consortium in evaluating construction of a pipeline from Turkmenistan through western Afghanistan to natural gas markets in Pakistan (Unocal Corp., 2002§).

For more than 30 years, the wars and violence in Afghanistan inflicted severe physical and socioeconomic effects on the country's people and environment and intensified its environmental problems. In addition to the natural hazards, such as drought, earthquakes, and flooding, the more crucial ones were deforestation, desertification, soil erosion, and water pollution. Regulation and protection jurisdiction of the environment was within the Ministry of Agriculture and the Ministry of Water and Power, but the Taliban suspended the activities of both organizations in 1996.

The transportation infrastructure of Afghanistan was in poor condition with almost 80% of the highways and roads unpaved. Owing to the rugged terrain in the country, the only operational rail network, which was about 25 kilometers (km) long, joined Afghanistan with Turkmenistan and Uzbekistan.

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Kabul, Afghanistan
Ministry of Water and Electricity
Kabul, Afghanistan

PAKISTAN

The Islamic Republic of Pakistan is in southern Asia in the northwestern corner of the Indian subcontinent. It borders the countries of India to the east, China to the northeast, Afghanistan to the north and west, and Iran to the southwest. The Arabian Sea along the south forms a 1,046-km coastline. Its total area of 803,940 km^2 is slightly less than twice the size of California (U.S. Central Intelligence Agency, 2003§).

Pakistan's GDP at purchasing power parity increased by an estimated 4.4% in 2002 to $295.3 billion (U.S. Central Intelligence Agency, 2003§).

Mining and quarrying products, which included petroleum and natural gas, played a minor role in the economy of Pakistan; they accounted for less than 1% of the GDP (Country Briefings, 2002§). The country also produced a variety of minerals, of which the more important included barite, chromite, coal, dolomite, limestone, magnetite, natural gas, gypsum, petroleum, salt, and sulfur. Additionally, various regional geologic surveys substantiated the potential of such metals as copper, gold, iron ore, lead, platinum, silver, and zinc and such industrial minerals and rocks as multicolored granite, marble, and other dimension stones of high quality that were exported (Pakistan Ministry of Finance, 2003§).

Pakistan Steel Mill was Pakistan's only integrated steel company. It was located near Port Muhammad Bin Qasim and 25 km east of Karachi and had a capacity of 1.1 million metric tons per year (Mt/yr). It was constructed with technical assistance from the Soviet Union. The iron ore, manganese, and coking coal for the plant were all imported. It produced billets, hot- and cold-rolled coils and sheets, coke, pig iron, and galvanized sheets.

Pakistan had 24 cement plants in 2002; installed capacity totaled 17.7 Mt/yr; this was about 8% more than that of 2001. Of these plants, 20 were in the private sector, and the remaining, in the public sector. The increase in cement production was due to a boost in construction activity, increasing development expenditures by the Government within the country, and reconstruction work in Afghanistan (Pakistan Ministry of Finance, 2003§).

Pakistan has vast untapped coal deposits, which, according to some estimates, may be adequate to supply the country's needs for up to 100 years. Sindh Province alone has sufficient coal resources to meet national requirements for decades. The Sindh Coal Authority (SCA) was planning a 450-megawatt integrated powerplant to meet anticipated demand by 2005 based on coal supplied from the Province's Dadu District. The SCA also has delineated a 50- km^2 area for leasing to private companies.

In 2002, Pakistan continued to depend on imported oil and natural gas because it consumed more than five times its domestic production. Although the country may never attain self-sufficiency in oil and gas, the Government encouraged private firms, which included foreign-owned ones, to develop domestic production capacity. Although the country had developed the necessary infrastructure to transport and distribute its gas and petroleum adequately, net imports were projected to increase substantially by about 7% per year, which may present burdens. The country had about 7,400 km of transmission pipeline (U.S. Energy Information Administration, 2002§; Pakistan Ministry of Petroleum and Natural Resources, undated§).

In 2002, most of the active foreign-owned oil exploration and production companies in Pakistan were small independents. The most prominent were Lasmo Oil Plc (the United Kingdom-based subsidiary of Eni of Italy and BP Pakistan Exploration and Production Inc. (a United Kingdom-based subsidiary of BP p.l.c.) (BP p.l.c., 2002§; Eni, 2002§). Pakistan's producers were centered on the Potwar Plateau in Punjab and Sindh Provinces.

A 30,000-barrel-per-day (bbl/d) oil refinery was under construction by Bosicor Pakistan Ltd. near Karachi, Balochistan Province. The $50 million refinery was to produce almost all types of petroleum products from crude oil supplied from Qatar by France's TotalFinalElf; the crude oil would be purchased by Pakistan State Oil Co. Ltd. A refurbished unit previously owned by a U.S. petroleum company was being used in the construction of the refinery (Pakistan & Gulf Economist, 2002; U.S. Energy Information Administration, 2002§).

The newest refinery in Pakistan was the Pak-Arab Refinery Co. Ltd. (Parco) greenfield Mid-Country Refinery complex at Mahmood Kot in Punjab Province, which was commissioned at a cost of almost $900 million. The complex consisted of 11 main process units, treatment and recovery units, and a full complement of residential housing. Numerous offsite facilities included 46 units for crude oil, intermediate feed stock, and other finished product storage. The refinery had a throughput capacity of 100,000 bbl/d, which consisted of light Arabian crude from Saudi Arabia and crude from Abu Dhabi. Parco was a joint venture of the Government of Pakistan (60% interest) and Abu Dhabi Petroleum Investment and Österreichische Mineralolverwaltung AG (OMV) of Austria (40% combined interest) (Parco Ltd., 2001a§, b§).

Beginning in 2001, the Asian Development Bank was to provide about $1 million in a technical assistance grant to restructure Pakistan's natural gas sector to make it more efficient and attractive for investments from the private sector (Asian Development Bank, 2001). The Pakistani Government also approved its own funding of about $1.5 million in corresponding support. The public sector previously had been unable to improve its infrastructure owing to under funding, and natural gas discoveries have remained undeveloped, which kept the country heavily reliant on imports. Pakistan's Ministry of Petroleum and Natural Resources was to run the program.

Pakistan's natural gas producers included the state-owned producers Pakistan Petroleum Ltd. and Oil and Gas Development Corp., as well as foreign companies, such as Atlantic Richfield of the United States, BHP Billiton Ltd. of Australia, Lasmo Oil, and OMV. These were operating within the country in the following producing gas fields: Adhi Field, Punjab Province; Kandhkot and Shikarpur Fields, Sindh Province; and Sui Field, Balochistan Province (Pakistan Petroleum Ltd., 2002).

The transportation infrastructure of Pakistan was moderately developed. Of the 254,410 km of roads, 109,396 km was paved, which included 339 km of expressways, and 145,014 km was unpaved. Pakistan has no inland waterways. The public sector railway system consisted of 7,718 km of broad-gauge [1.676-meter (m)] track, of which 293 km was electrified; 1,037 km of double track; and 445 km of narrow-gauge (1.000-m) track. Of the 124 airports, 82 had permanent-surface runways. Pakistan had 13 heliports in 2002. International shipping ports included Karachi and Port Muhammad bin Qasim. The merchant marine fleet of 17 ships included 1 petroleum tanker. Pipelines included 4,044 km for natural gas, 250 km for crude oil, and 885 km for petroleum products (U.S. Central Intelligence Agency, 2003§).

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TABLE 1
PAKISTAN: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		1998	1999	2000	2001	2002[e]
METALS						
Aluminum, bauxite, gross weight		4,954	11,216	8,668	9,000	9,500
Chromium ore:						
Gross weight		8,885	16,279	26,844	26,000	27,200
Cr_2O_3 content		3,998	7,325	12,080	12,000	12,500
Iron and steel:						
Pig iron[e]	thousand tons	1,500	1,500	1,500	1,500	1,600
Steel, crude	do.	494	500 [e]	500 [e]	500	550
Lead, refined, secondary[e]		2,000	2,000	2,000	2,000	2,100
INDUSTRIAL MINERALS						
Abrasives, natural, emery[e]		150	150	120 [2]	150	150
Barite		20,657	20,505	21,234	25,000	26,100
Cement, hydraulic	thousand tons	8,901	9,600 [e]	9,900 [e]	9,900	10,300
Chalk		4,357	6,283	7,711	7,700	8,000
Clays:						
Bentonite		14,196	15,349	27,700	28,000	29,200
Fire clay		66,672	152,379	143,643	145,000	151,500
Fuller's earth		14,659	15,565	15,288	15,000	15,700
Kaolin (china clay)		70,777	64,692	49,574	50,000	52,000
Other[e]		200,000	200,000	200,000	200,000	209,000
Feldspar		31,191	29,235	43,186	45,000	47,000
Fluorspar		1,000 [e]	220	997	1,000	1,000
Gypsum, crude		243,978	244,538	377,000	380,000	397,000
Magnesite, crude		3,157	2,175	4,192	4,200	4,400
Nitrogen, N content of ammonia		1,797,200	1,998,900	1,884,300	1,966,100 [2]	2,050,000
Phosphate rock:[e]						
Gross weight		11,000	11,500	11,000	11,000	11,500
P_2O_5 content		1,870	1,950	2,000	2,000	2,100
Pigments, mineral, natural, ocher		3,180	3,200 [e]	4,747	4,800	5,000
Salt:						
Rock	thousand tons	1,038	1,019	1,313	1,500	1,600
Marine	do.	15	16	20	20	21
Total	do.	1,053	1,035	1,333	1,520	1,590
Sand:[e]						
Bajir and common		175,000	175,000	212,120 [2]	215,000	225,000
Glass		122,000 [2]	130,000	162,000 [2]	165,000	172,000
Sodium compounds, n.e.s.:						
Caustic soda		216,000	220,000 [e]	220,000 [e]	220,000	230,000
Soda ash, manufactured[e]		220,000	230,000	230,000	230,000	240,000
Stone:						
Aragonite and marble		354,818	391,754	582,000	585,000	611,000
Dolomite		99,741	188,573	287,962	290,000	303,000
Limestone	thousand tons	8,749	9,437	9,884	9,900	10,300
Other (as "ordinary stone")[e]	do.	15	18	20	20	21
Strontium minerals, celestite		598	634	1,918	2,000 [e]	3,000
Sulfur:						
Native[e]		150	150	150	200	210
Byproduct, all sources		18,988	21,166	20,189	21,000	21,900
Total		19,138	21,316	20,339	21,200	22,000
Talc and related materials, soapstone		48,927	67,670	54,365	55,000	57,500

See footnotes at end of table.

TABLE 1--Continued
PAKISTAN: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		1998	1999	2000	2001	2002[e]
MINERAL FUELS AND RELATED MATERIALS						
Coal, all grades	thousand tons	3,164	3,461	3,116	3,500	3,700
Coke[e]	do.	850 [2]	900	900	900	950
Gas, natural:						
Gross production	million cubic meters	20,224	8,876	24,222	25,000	26,000
Marketed production (sales)[e]	do.	17,500	7,700	20,900	21,000	22,000
Natural gas liquids[e]	thousand 42-gallon barrels	1,080	564 [2]	600	600	650
Petroleum:						
Crude	do.	16,885	19,986	20,450	22,000	23,000
Refinery products:[e]						
Gasoline	thousand 42-gallon barrels	8,900	8,589 [2]	8,500	8,700	9,000
Jet fuel	do.	4,700	5,255 [2]	5,500	5,700	6,000
Kerosene	do.	3,707 [2]	2,714 [2]	2,700	3,000	3,100
Distillate fuel oil	do.	13,500	14,000	14,000	15,000	15,700
Residual fuel oil	do.	13,419 [2]	13,500	13,500	15,000	15,500
Lubricants	do.	1,400	1,500	1,500	2,000	2,100
Other	do.	5,000	5,000	5,000	7,000	7,300
Total	do.	50,600	50,600	50,700	56,400	58,700

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown.

[1]Table includes data available through February 9, 2003. No data was available for Afghanistan at the time of this publication.

[2]Reported figure.